

Application No.: 10/598,477
Art Unit: 2833

Amendment under 37 CFR §1.116
Attorney Docket No.: 062877

AMENDMENTS TO THE DRAWINGS

The attached replacement sheets of drawings include changes to Figs. 3 and 4.

REMARKS

Rejections under 35 USC 103(a)

Claims 8-17 were rejected under 35 USC §103(a) as being unpatentable over JP 48-52090.

The Examiner alleged as follows:

JP'090 substantially discloses the claimed invention except for the bulging or recessed portion being 70 mm or less from the front end of the plug body. It would have been obvious to place the bulging or recessed portion of JP '090 at this distance, to save material and to decrease the size for easier storage.

Applicant's arguments filed July 10, 2008 have been fully considered but they are not persuasive. It would have been obvious to place the bulging or recessed portion of JP'090 at a distance of 70 mm or less from the front end of the plug body, to save material and to decrease the size for easier storage.

(Office Action, page 2, lines 10-17). Claims 8-17 have been cancelled and replaced by new claims 18-35.

Claim 18 recites, among other things, "a flexible grip part for a third finger and subsequent fingers of the gripping hand, said grip part extending rearwards from the rear end of said plug body and covering outer surface of said cord, said grip part being provided with a bulging portion at a rear end thereof, wherein a four-finger width from a second finger through a fifth finger of the gripping hand fits in with a distance from the forward end of said plug body to the bulging portion that positioned at a distance about 45mm to about 70mm from the forward

end of said plug body, and said grip part is formed at a selected portion between a position of the third finger behind the second finger and a position of the fifth finger.”

Claim 26 recites, among other things, “a grip part for a third finger and subsequent fingers of the gripping hand, said grip part extending rearwards from a rear side of a second finger position of said plug body, said grip part being provided with a bulging portion at a rear end thereof, wherein a four-finger width from the second finger through a fifth finger of the gripping hand fits in with a distance from the forward end of said plug body to the bulging portion that positioned at a distance about 45mm to about 70mm from the forward end of said plug body; and said grip part is formed at a selected portion between a position of the third finger behind the second finger and a position of the fifth finger”

JP48-52090 (which will be hereinafter simply referred to as JP090) describes as follows:

This invention relates to the improvement of electric plugs. Heretofore, if an attempt has been made to pull out, from a power socket, a plug adapted to make electric connection with flatirons, fans and other heating appliances via the socket after no electric connection has been needed, a manner of pulling out the plug with a cord held with force has been frequently taken. This is because fixing of the plug to the socket sometimes appears in a tightly inserted state, and on the other hand, it is often hard to pull out the plug unless the plug is forcedly picked. Pulling out the plug from the socket in this manner has caused drawbacks such as those leading to accidents attributable to spontaneous loosening of a cable set screw at the end of the cord to a degree that the cord is cut off from the plug body or to occurrence of short circuits by disconnection of the cable itself to a degree that a clamped portion of the cord is burnt.

An object of present invention is to provide a plug that is free from the above drawbacks in the related art, thus may be pulled out from a power socket in an extremely easy manner, and besides, ensures that no breakage of the socket and a plug body is caused even if with the plug inserted in the socket, catching-mannered contact with the other thing happens. The

present invention is now specifically described on the basis of an embodiment with reference to the accompanying drawings.

As shown in FIGS. 1 and 2, a plug (A) according to the present invention comprises a plug body (1) and a gripping portion (2) made of a flexible material such as plastic and having a predetermined length as much as about a hand's width. The gripping portion (2) is arranged to be continuous to the rear end of the plug body (1) and has, in the axial center, a through hole (3) adapted to insertion of a cord (4). The gripping portion (2) has, at the rear end, a projecting flange-shaped finger stopper (2), and, at a front end, ..." (JP090, on pages 1 to 2).

As shown US Patent No. 2,035,345 issued in 1936 (which will be hereinafter simply referred to as USP345), plug connectors used for flatirons and other heating appliances are known. These plug connectors are of a type having a rubber grip 26 at a rear end extending at an oblique angle to the rear of a plug body 10. In order to pull out the plug connector of this type from the heating appliance, a manner of directly pulling out the plug connector with the rubber grip 26 gripped is taken.

On the other hand, JP090 proposed a plug having the gripping portion (2) of the length as much as about the hand's width in order to pull out the plug without gripping the cord. The plug according to JP090 is also directly pulled out with the gripping portion (2) gripped in the same manner as USP345.

The electric plug of the present invention is specially designed for a method of pull-out operation specified as shown in the present application, and it gives great advantages to the electric plug when the plug is pulled out. It also discloses that the highly effective plug-shape range exists with the plug. It further specifically discloses the shape range of the grip part at the

rear side of the plug body on the basis of the size of general user's fingers used for gripping the grip part.

More specifically, the highly effective grip-shape range on the basis of the size of a general user's hand whose four-finger width is about 70mm. With the plug having the grip part of a defined shape as shown in the present invention, and with adoption of the method of pull-out operation shown in the present application even when the plug is tightly fitted in the socket, it becomes easy to pull out the plug with one hand from the socket softly in an easy manner, without causing the user's arm or hand to hit against nearby objects with the impulse when the plug is suddenly released. Moreover, the plug of the present invention takes a simple shape of a small length enough to be well accepted in a sequestered space near the wall, and in such a case, may be pulled out softly as well.

If the distance from the forward end of the plug body to the bulging portion is greater than about 70mm from the forward end of the plug body to a position where the fifth finger of the user's hand is to be applied, some user with a smaller hand's width will not be able to have his/her rearmost finger reach the bulging portion. As a result, he/she will not be able to effectively pull out the plug with the method of pull-out operation. Under such a circumstance, the advantages of the plug of the present invention will not be obtained.

On the other hand, if the distance from the forward end of the plug body to the bulging portion is smaller than about 37mm from the forward end of the plug body to a position where the third finger of the user's hand is to be applied, it naturally becomes difficult to put the third

finger between the bulging portion and the second finger. Thus, the advantages of the plug of the present invention will not be obtained.

The claims of the present application recite the grip-shape that allows the remarkable effect by the grip part. It is noted that the definition of such the shape range with respect to the grip part of the electric plug is especially advantageous for the above method of pull-out operation. This defined grip-shape range may be fully understood to a person of ordinary skill in the art when the electric plug of the present invention is manufactured. The plug as defined in claim 18 provides a comparatively small-sized plug body as shown in FIG. 4, and the plug as defined in claim 27 is suited to provide a plug body as shown in FIG. 6, where it is not preferable to make the plug of a small length.

Various types of proposals have been made on the plugs such as the plug having the grip part. However, for about seventy years since USP345 issued, there has been no effective type of electric plugs having the grip part shape as defined in the present claims. More specifically, there has been no disclosure regarding the significance of the grip-shape range for the electric plug, together with the method of pull-out operation with respect to the plug. Even if some electric plug has a grip part adapted to pull the plug from the socket, none of them teaches or suggests the specific grip-shape range, as well as the most suitable pull-out operation well matching the grip-shape.

The grip-shape range as recited in the present claims is significantly different from that of JP090. The cited reference JP090 does not discuss the method of pull-out operation with respect

to the electric plug as disclosed in the present application, much less the grip shape suitable for the method of pull-out operation or the resulting advantages of the present invention.

Thus, JP090 does not teach or suggest, among other things, “a flexible grip part for a third finger and subsequent fingers of the gripping hand, said grip part extending rearwards from the rear end of said plug body and covering outer surface of said cord, said grip part being provided with a bulging portion at a rear end thereof, wherein a four-finger width from a second finger through a fifth finger of the gripping hand fits in with a distance from the forward end of said plug body to the bulging portion that positioned at a distance about 45mm to about 70mm from the forward end of said plug body, and said grip part is formed at a selected portion between a position of the third finger behind the second finger and a position of the fifth finger,” as recited in claim 18.

Also, JP090 does not teach or suggest, among other things, “a grip part for a third finger and subsequent fingers of the gripping hand, said grip part extending rearwards from a rear side of a second finger position of said plug body, said grip part being provided with a bulging portion at a rear end thereof, wherein a four-finger width from the second finger through a fifth finger of the gripping hand fits in with a distance from the forward end of said plug body to the bulging portion that positioned at a distance about 45mm to about 70mm from the forward end of said plug body; and said grip part is formed at a selected portion between a position of the third finger behind the second finger and a position of the fifth finger,” as recited in claim 26.

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For at least these reasons, claims 18 and 26 patentably distinguish over JP090. Claims 19-25, depending from claim 18, claims 27-33, depending from claim 18, patentably distinguish over JP090 for at least the same reasons.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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Attachment: Replacement Sheet of Figs. 3 and 4